A Farmer's Tale -or- The Incredible Expanding Web Farm

What is it with these web farms? Why are they so fashionable that airlines and service providers are spending untold millions on them. When lesser investments are involved, endless business case discussions take place, returns on investments are calculated, risks are assessed and benefits quantified to the satisfaction of the most critical management. However, when it comes to web farming, all caution is thrown to the four winds; fashion, superstition, consultants and four letters acronyms reign supreme.

In the airline world, on-line sales have been a standard part of the business model since the late sixties of the previous century. The central transaction processing machines that handle all those reservations and associated transactions in real real-time are more often than not TPF systems. Those reservations systems, whether GDS's, CRS's or ARS's, contain all the logic that is required for the on-line sale of tickets and the support of all related processes. To boot, the combination of availability, scalability, functionality and cost per business transaction of those systems has never been surpassed nor even remotely approached by any other platform.

From a simplistic point of view, nothing essentially changes when airlines start selling their seats through the new channel: the Internet. It is just another distribution channel that happens to connect directly to the consumer, skipping the intermediate stations in the travel supply chain. Of course, the interaction with the customer differs from the model in traditional retail channels, and a more obvious and friendly presentation is required, but all the main business processes already exist and can be re-used. Why then, have we been going through so much expense and effort to try to make the connections between the web and the reservations systems function properly?

In our opinion, the main reasons are:

- The people building the web front ends don't understand TPF and are frightened of it. People despise and denigrate what they fear. The web farmers have a set of primitive tools to connect to TPF and they are stuck to this traditional toolset (terminal pooling and screen scraping).

- Because of this attitude, little fruitful knowledge exchange between the two competing worlds of TPF and so-called 'new technology' has occurred. So, instead of using the best of both worlds, many existing processes have been reinvented, usually offering less quality, less stability and less robustness at a greater cost than the original TPF capabilities they were supposed to supersede, but rarely if ever did.

- The effort, the techniques and the associated costs of running a reliable, large-scale transaction processing environment on a new technology platform were, and still are, grossly underestimated.

An airline desiring to launch into the Internet sales channel can start by deploying a relatively simple web server. The alternative is to outsource such a service to a GDS. The first option (a private web server) appears cheap initially, but it soon becomes apparent that one web server is not sufficient. A fall back

machine is required. To offer scalability, a load balancer is essential, and then development, acceptance and test environments need to be set up. Consequently, a steadily increasing number of servers are deployed, the software licence fees mount up, an expanding army of technicians are required to support the servers around the clock, etc. Before you can say "Bob's your uncle", a 'web farm' has materialised and gobbles up more and more of the ICT budget.

The GDS hosting alternative costs an airline several dollars per booked segment. Especially for the low cost carriers this is not an option. Any airline that plans to sell a considerable part of its seats through the Internet rapidly reaches the point where GDS booking fees theoretically exceed the costs of a privately controlled web farm.

Last but not least, the costs of web farming in whatever form come in addition to the reservations systems budget, which itself increases because of the massive growth in transactions that the Internet 'look, but don't book' behaviour causes. Irrespective of the functional capability of the web servers, the reservations systems budget is still required for a number of very good reasons:

- The great bulk of the business requests still come in through the traditional retail channels, such as GDS sales, airport sales, travel agents, etc.

- All reservations are done on the same database, which is part of the reservations system. In order to guarantee reliable, unambiguous availability figures via all access channels, a central database is the only valid and logical choice. Furthermore, this database is accessed through very specific, airline-dependent sets of business rules that determine the end result of any availability request.

- System availability requirements of critical airline applications are high. Most airlines operate in the range 99.94% to 99.99% range, as a percentage of total time over long periods; some ALCS installations have actually reached the 100% limit for 6 months in succession.

Conclusion

A web farm is not an alternative for a reservations system, although some managers and many consultants may rightly assess that their career prospects are greatly improved by pretending or proclaiming that is so. The investment to make a web farm a true alternative for a reservations system would be massive. Rebuilding a reservations system on whatever platform requires man-centuries of effort and the probability of success is extremely low. There have been many well-funded attempts over the past 20 years, but all have failed miserably. However, even if someone were to succeed, the cost of such a venture would be exorbitant compared to any foreseeable benefits.

In many ways a web farm is a bacterial entity. It multiplies ad infinitum given a balanced source of nutrients. The nutrients required are an ever expanding ICT budget, external consultants and a small army of architects. So, is there a viable alternative? We believe there is. A logically very 'thin', if not anorexic, web farm can probably service the bulk, and most likely all of the reservations related business requirements. With advanced access methods to the TPF applications (T2SE), it becomes a lot more viable to retrieve the data required

directly from the reliable source (TPF) and to still maintain acceptable response times. Acceptable response times are not something an obese web farm can achieve. With an anorexic web farm the intricate caching, involving complex, but never foolproof, synchronisation methods become obsolete. Through the use of T2SE the concept of pooled terminals is history, allowing for stateless communication with the TPF applications. This alleviates the web server from maintaining sessions, holding resources, etc.

The anorexic web farm can do what it should be designed to do: perform presentation services such as multi-language support, graphical representations and allowing various access channels such as mobile phones, browsers, etc. at a price all can afford. Additional web based services can be incorporated, such as private fares, a frequent flyer package or other 'off the shelf' applications.

Cees Mul & Bruce Taylor
Datalex – Amsterdam
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